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ABSTRACT

A study of German-speaking learners of English as a Second Language observed students telling a story, in English, based on an eight-frame cartoon provided to them. The cartoon had a surprising conclusion whose understanding required careful observation early on, creating a cognitive stress affecting language processing. It was found that in addition to this task stress, the students identified with a character or characters, and this perspective confounded the linguistic findings. However, the story told successfully by one subject allows analysis of temporal variables in the retelling, attention to details, vocabulary deficiencies, native language interference (fossilizations and transfers), and use of reliable phrases. It is concluded that while the processing of a second language is related to linguistic and metalinguistic knowledge acquired in the native language, the real issue in advanced second language processing is the availability of lexicon, particularly of proceduralized linguistic units (words, collocations, and formulas) readily accessible so the speaker can afford to search for and retrieve other linguistic knowledge. A brief bibliography is included. (MSE)

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3. Language production – language contact: the significance of learners' speech

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It is one of our basic assumptions that the human production system is a unified one, that there are no fundamental differences between non-linguistic and linguistic processing, or between first and second language processing. Language production, of course, is only one facet of the human production system. If one assumes that under normal conditions this system is making full use of its capacity, and that it works sufficiently and rationally, one might expect that it develops and encourages the use of as many general processors as possible and as many peripheral knowledge sources as necessary. Analogy is the system's basic principle of making use of knowledge. Whenever possible, problems are understood and solved in terms of something else, as long as the system is ecologically efficient. This is what the first term in our title, LANGUAGE PRODUCTION, is supposed to allude to.

What about the second term, LANGUAGE CONTACT? Usually this term refers to the contact of two or more languages in society. But since language contact in society is a metaphor (there is no language contact outside the production systems of human beings who happen to think, listen, speak, read and write in more than one language) we take this term in the sense of interaction of different linguistic data in a common data base. The simple fact that human beings in all kinds of contexts all over the world know how to make efficient use of such a common data base proves that it cannot be as difficult as we linguists, or psychologists, or language teachers think it is. With the term LANGUAGE CONTACT, we are also aiming at the potential enrichment for the system that may result from such a common data base, and not at the interference caused by such contact and interaction.

Our main topic, the SIGNIFICANCE OF LEARNERS' SPEECH, therefore, attempts to envisage the importance of the study of second language learners' speech, and shed some light on the more general question of how language is produced. It is not the errors of learners, nor the linguistic description of learner language that we are interested in, but the possible knowledge about language production one may gain from looking closely at spoken language.

Producing a second language is not moving away from the starting point of one's primary language in the direction of a final goal,

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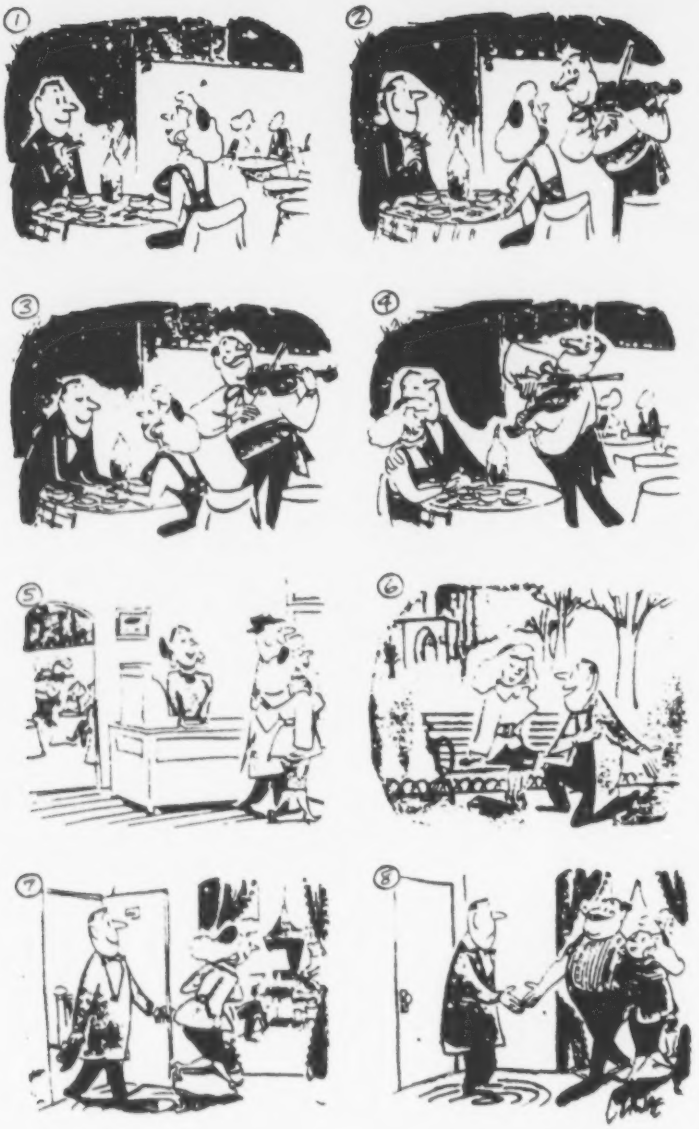
the target language. It is making full use of the system's various knowledge sources, general and peripheral, gained in and through the acquisition of the primary language. It is also modifying and expanding the system in order to adapt it to the particular environment. Of course, errors occur while this is being done, just as plenty of errors occur in first language production. They reveal the inadequacies of the system's architecture. What makes them more interesting is that they are indicators of planning and processing disturbances. Since these processes occur in real time, the assessment of temporal variables additionally gives us access to the mechanisms of language production.

Newell and Simon (1972) have argued that the human production system varies along four dimensions, the phylogenetic, the individual, the time, and the task dimensions. The dimension of particular interest in this paper is the task dimension. The shape and structure of the task environment is responsible for a large part of the variance in the behaviour of individual systems. Different tasks demand different solutions from the system. Complex tasks place a heavy burden on the system's problem solving capacity.

The task environment provides the basic problem solving situation the human information processing system is confronted with. When we talk we normally do so in response to tasks - natural ones in everyday life, or elicited ones in experimental situations. The goal of a human subject in a verbalization task is to decode and understand its structure, adapt to it and solve it. If it is easy to handle, the solution will be easy; if its structure is complex, it must first be decomposed and analysed. Such a task may put stress on the subject, and this stress can cause the system to malfunction. Increased attention and additional mental effort are needed to overcome this. However, the mental capacity of humans is not unlimited, and additional work may require more time, or may manifest itself in disruptions of the speech production processes (Newell and Simon 1972; Levelt 1978).

Task stress is one factor which has a strong influence on language processing. High processing load resulting from a complex task will lead to processing problems, especially in the case of a second language. The retrieval of task specific schemata, the establishment of a complex referential network, the search for a conceptual frame of reference, and so on, may exert high stress on the system before linguistic planning takes place. An analysis of the cognitive complexity of a task may thus help to shed light on the stress responsible for errors and hesitations ocurring in linguistic attempts to solve the task.

In this paper, I shall be describing some attempts made by German-speaking learners of English to describe a simple cartoon



Drawing by Claude.
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Man and girl become engaged

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(Figure one). The story consists of three episodes, each marked by a particular location: the restaurant, the park and the violinist's appartment. The first episode (frames 1-5) clearly fulfills the traditional function of introducing the place, time and main characters of the story. The second episode (frame 6), forms a sort of climax to the preceding action, and a quasi-resolution: the young man's proposal. The third episode (frames 7-8) contains 2 episodic units. The first (7) prepares the setting for the real resolution, or disillusion found in frame 8. This final complication is only a structural complication, however. The common goal is achieved in the end, however unexpected this may be for the young man. There is, in other words, a discrepancy between the anticipated story structure and the real course of events well-planned and executed by the violinist and his daughter. This discrepancy is reflected in the totally different perspectives of the three characters: the naive apperception of the innocent young man, and the scheming of the young woman and her father. This basic ambiguity results in a potentially ambiguous perception of the course of events. If the reader identifies with the young man, he is likely to be deceived until the end, and be confronted with the same problem as the young man. He does not know what is going on, or who is who. If the reader is smarter than the young man, and is not deceived by the fiddler, he will enjoy the game being played with him. In either case, the ambiguity of the cartoon puts a high processing load on the reader long before he starts to reproduce it verbally.

Throughout the cartoon, the reader is given the impression that the sequence of events develops quite steadily towards the goal of the action, the young couple's engagement. And this is actually what happens, but at the same time, the reader is deceived on purpose. It is not the OUTCOME of the story, the engagement, which causes surprise in the end, but the way in which something apparently spontaneous and natural turns out to have been planned and carried out by the violinist and his daughter. The story's supposed protagonist, the young man, has been trapped. He is in fact an antagonist suffering from his naivety.

The perception of the cartoon's problem-solving structure, development and final outcome quite evidently creates problems. The ambiguous structure causes potential collisions of schemata. In order to establish cohesion in the verbal reproduction of this cartoon, one has to decode its message starting with the final disclosure of the plot against the young man. One has to recognise that it is not a naive love story, but a crime story.

In addition to this particular cognitive task stress, our subjects seemed to have another particular psychological problem. Their immediate identification with the young man's (or young couple's) point of view, the choice of his (or their) perspective prevented

them from discovering the signals in the cartoon that might have led them in a different direction. That a young girl in collaboration with her father might try to trick a young man into engagement was quite obviously such a farfetched schema that none of our students was able to work with it. For this reason, the comparatively easy discovery that the violin-player was the girl's father actually proved very difficult. Most of our subjects, in the face of these difficulties, tried to solve the problem they ran into in the final episodic unit by making a seduction story out of it. They had the young man meet the young woman's husband in the couple's appartment. The cartoon surprisingly turned out to be a projective test revealing personality traits of our subjects which influenced their solutions to our task, and these lay beyond our particular interest in first and second language speech production.

However, important though these psychological variables may be, the task of verbalising this cartoon, and the difficulty of decoding its hidden structure presupposes the possibility of proceduralised units of speech in order to gain time and energy for an overall fluent solution of such a complex job. As we have shown elsewhere (Dechert 1983), establishing a sound referential network reflecting the story's configuration and interaction of the main characters is a first step towards establishing structure and coherence. This is exactly why the cartoon's ambiguity as to real or supposed protagonist-antagonist configuration exerts a severe task stress. The solutions to this task that we collected in our corpus represent a wide range of possibilities. There are linguistically acceptable first language accounts which completely fail to reproduce the story's causal connection of events. There are linguistically poor second language accounts which nevertheless give evidence that the story's structure and message were understood. There is, in other words, a wide variety in speakers' ability to comprehend and reproduce stories under conditions of high task stress.

ANALYSIS OF THE DATA

This analysis looks in detail at the retelling produced by a single subject, W. W's protocol is reproduced in Table One.

Each episodic unit of the story contains between six and twelve basic propositions. Altogether there are about seventy, evenly distributed over the whole cartoon, with the exception of the first unit where the information is naturally more dense. W's retelling contains one addition to the cartoon (1.11), and no really important item of information is omitted. From a propositional point of view, the reproduction is an almost perfect selection of the cartoon's important information.

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TABLE ONE

SPEECH SAMPLE PRODUCED BY AN L2 SPEAKER, W.

Total speaking time	98.44 secs	
Articulation time	44.88 secs	
Pause time	53.56 secs	(typical for an L2 speaker)
Speech rate (syll/min)	112.0	(good for an L2 speaker but much below the L1 rate)
Articulation rate (syll/sec)	4.1	(very good for any speaker)
Number of syllables	183.0	
Number of pauses	50	
Mean length of runs (no. of syllables between two pauses)	3.59	(good for an L2 speaker but much below the L1 rate)

1 a man (.) and a woman are sitting in a (0.20)
2 restaurant // (2.40) then (0.36) a Hungarian style
3 (0.64) [vi'a:nou] player (0.24) uh ['vialin] player comes
4 to the table (0.44) and plays with great pleasure
5 / (1.16) so that (1.56) both man and woman (0.48)
6 are (0.88) amusing themselves // (1.60) and (0.72)
7 [coughs] suddenly they come closer (1.20) the
8 (0.44) woman (1.64) sits (1.52) very close to
9 (0.20) the man (0.32) and they are (0.76) uh
10 (1.36) deeply content / (1.72) then they pass (0.20)
11 the cashier (.) and (1.36) go into a park / (0.88)
12 where the (0.24) wife sits on a bank and (0.84)
13 the man (0.56) uh (3.00) says something to her (.)
14 may be (0.60) they talk about marriage / (1.92)
15 on the next (0.40) uh (.) picture (2.64) the (2.24)
16 man and woman are entering a room / (0.80) where
17 some people (0.56) are sitting // (1.64) and (2.88)
18 the last picture shows (2.32) the wife coming
19 (0.80) uh: (0.44) out of this room, (2.36) with
20 this (0.56) Hungarian style (0.44) ['vialin] player
21 (1.04) and (2.04) it seems to be (0.56) her father
22 which (0.44) uh: (0.20) congratulates (1.32) his
23 (0.44) son-in-law /

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An analysis of the temporal variables of the whole reproduction provides some useful insights into the reproduction process. The amount of pause time (54.41% of the total production time) is quite typical of an L2 speaker; the speaking rate is also below the average for L1 speakers, though quite impressive for an L2 speaker. What is amazing is the articulation rate of 4.1 syllables per second, which is good for any speaker. This means that W needs some time to plan what he is going to say, but when he speaks he does so in a comparatively fluent way. This finding is confirmed by the figure for average length of run, i.e. the number of syllables between two pauses. Although 3.59 is well short of native speaker competence, it is not bad at all for an L2 speaker.

W's attempts to understand and verbalise the cartoon story demonstrates a certain sense for details. He immediately recognises that the violinist is Hungarian; he notices the cashier at the end of the first episode; he attempts - though with little success - not to restrict himself to a simple chronological listing of events, but to catch some of the cartoon's atmosphere and emotion. He is one of the few of our subjects who is not deceived by the cartoon's inherent love-story schema. He debunks the violinist's dirty trick, and there is even a sense of humour and irony in his language when he concludes the story with the words 'congratulates his son-in-law'.

In spite of this, W's reproduction clearly reveals an evident lack of competence to really express what he knows and what he wants to say. There are severe vocabulary problems, such as the lack of the word 'violinist'. There is interference from his native German, as in '(they) are amusing themselves'. There is the desperate search evident in line 6, for a word such as 'cuddle', 'caress' or 'fondle'. Quite obviously his vocabulary is remarkably inferior to his knowledge of the world. This passage suffices to show that W's problem is not the conceptualisation of the event, not the syntactic structuring of his utterances, but his lack of words and his inability to paraphrase what he cannot put into words. His constant search for words and their collocations is the main reason for his pausing and hesitating throughout his production. There are also elementary fossilisations such as 'bank' for 'bench' and 'wife' for 'woman' (from German Bank and Frau), and other German transfers like 'on the next picture' (from German 'auf dem Bild').

What does work for W is his ability to tell a story: the introduction of protagonist and antagonist, the brief but adequate description of the setting, the use of chronology, the marking of the beginning of episodes and episodic units. For an advanced learner who has acquired a story telling competence in his L1, retelling a story in a second language is an easy task, as far as metalinguistic analysis and synthesis of the story's structure is concerned. The more concept-driven it is, the easier it is. The

more complicated part of the job is the search for proper words and collocations, but this can be made easier if the speaker can rely on a minimum of proceduralised lexical units, words, and formulas (Dechert 1984). Where such units are not available, as in W's search for a word to describe the violin-player, disfluencies and speech errors are likely to result (1.3-5). Where such units are available, speech tends to be more fluent. In W, this shows up in such 'islands of reliability' as the phrase 'a man and a woman'. Islands of reliability are syntagmatic units which are easily accessible on all levels of processing, and are widely used to gain time and save energy for declarative search processes around them. They are also used, as in W's text, to establish a network of relations. W's text reveals that variants of 'man and woman' are spread all over the text, and add to it a considerable degree of linguistic and cognitive stability.

CONCLUSION

Little is known about the cognitive development of advanced learners. We do not know much about the processing of languages by advanced learners either. There are more questions than answers.

The processing of a language has certainly got to do with the task environment to which the system responds. If the task is complex, the system will experience stress, and this stress will cause competition and disturbance in the system. There will be errors in the system's output.

The processing of a second language has got to do with the metalinguistic and linguistic knowledge acquired in L1. Every single procedure in the system's architecture that may facilitate second language processing will be activated. Syntactic knowledge, for example, in the case of similar languages like English and German, need not be acquired anew. When two languages are SVO languages, very little must be learned about word order.

What seems to be the real issue in advanced second language processing is the lexicon. Proceduralised linguistic units: words, collocations, formulas which are immediately available and accessible have an important function, so that the system may concentrate on the search for and retrieval of declaratively stored linguistic knowledge. There are, of course, stages in the proceduralisation of linguistic units. There is the even more interesting question of what the candidates for proceduralisation are. Are they universal or language specific?

These questions, we guess, will be exciting issues in future second language processing research.

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